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ABSTRACT

This description of a unit for teaching about the environment at the junior high level is an experimental study. The focus of the program is the integration of several media; films and tapes play a large role in the unit. Students perform a combination of classroom work, field work, and simulated exercises; assessment procedures are described. Units developed to date include: traffic, highway codes, railways, farming, roads, and houses. (CWB)

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NUFFIELD FOUNDATION 'RESOURCES FOR LEARNING' PROJECT

A MULTI-MEDIA PROGRAMMED APPROACH TO ENVIRONMENTAL STUDIES

SP 001 153

(A brief description of some aspects of the work carried out at Binley Junior School, Coventry)

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A MULTI-MEDIA PROGRAMMED APPROACH TO ENVIRONMENTAL STUDIES

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Although much further work remains to be done, initial evidence from the Binley Pilot Experiment suggests that a multi-media programmed approach to environmental studies can be successfully employed in the upper classes of a junior school.

During the period from November 1967 to June 1968 third year children and two members of the staff of Binley Junior School on the outskirts of Coventry have been co-operating in an experiment sponsored by the Nuffield Foundation's 'Resources for Learning' Project. The main objective has been the development of a range of programmed materials intended to support and enrich the work of teachers in their attempts to provide 9 - 11 year old children with information about, and experience of, the immediate environment in which they live and learn.

The project has been built around the use of programmed materials which have been written and developed by the author. Basically each programme consists of a loose-leaf text housed in a quarto-sized, plastic-covered ring binder. Although the programmes are linear in format, careful efforts have been made to build into each one situations and activities which have demanded a wide range of responses from the pupils. The effect of this has been to eliminate any suggestion of boredom on the part of the children and this is evidenced by the fact that, on occasions, the children have willingly worked on

programmes throughout an entire school day.

Programmes have been written around topics which are integral features of the environment of most schools. A dominant theme of the programmes so far developed has been transport and in this connection children nave worked on programmes dealing with Traffic, The Highway Code, Cycling, Roads and Railways. Initial work has also been attempted on programmes linked to the study of Houses, Shops, Farming, Rivers and Canals and Weather.

To help the reader appreciate the role played by a programme, it is proposed to describe what has been involved in the study of one particular programme entitled 'Traffic'. The basic aim of this programme is to teach children how to conduct a traffic census and to analyse the resulting data.

The first necessity was to establish the existing level of the children's knowledge about the subject. This was done by asking them to complete an ASSESSMENT SHEET which consisted of a range of questions requiring not only factual knowledge but also the ability to interpret, discriminate and make judgements. Where the Assessment Sheet revealed that the children knew relatively little about the subject, a study of the topic was undertaken.

Study was initiated by a visit whereby a small group of children (6 was normally the maximum), accompanied by a volunteer parent, set out to discover some points of general interest about traffic in

the locality. This took the form of a walk along a prescribed route, in the course of which the children were asked to record a number of observations. They were encouraged to co-operate with one another and the parent accompanying them had been previously briefed through the medium of a PARENTS' GUIDE SHEET. On returning to the classroom the children were encouraged to write up an account of their visit in a FIELD WORK FOLLOW-UP BOOKLET.

Following this stage the children collected the PROGRAMME and a copy of the PUPIL'S RESPONSE BOOKLET in which they recorded their written responses to the programme. Work on the programme was undertaken in pairs and each pair worked in a specially constructed STUDY BOOTH consisting of a wooden framed, hinged screen made of 'Sundeela' which provided some degree of privacy plus an area of pinboard space which was available to the children for the display of their work.

Initially the programmes consisted of duplicated sheets with illustrations mounted where appropriate. At a later stage in the experiment it was possible to use proof copies which had been printed through the co-operation of Blandford Press Limited. The format of the programme was a vertical linear one and the children covered the answers on the right hand side of each page with a 3" x 10" 'mask' in the form of a strip of cardboard. All the programmes so far written have been divided into chapters or sections. In the case of the 'Traffic' programme there are six sections, headed as follows:

1. Why count the traffic?
2. Types of traffic
3. How traffic is counted
4. Where to take your traffic census
5. Taking the census
6. Looking at your census results.

All the programmes have been written to include situations involving:

1. The use of a 'Language Master' and associated cards
2. discussion with the teacher
3. the observation of film loops
4. the use of a cassette type tape recorder
5. activity work
6. creative work of various kinds
7. visits

Examples of such situations as they arise in the 'Traffic' programme are now described.

1. The use of the 'Language Master'

Although the potential uses of this machine are numerous, in the Binley experiment its use has been confined to that of an AUDIO-DICTIONARY. Children needing the pronunciation or definition of a word have gone to a wooden tray containing 'Language Master' cards arranged in alphabetical order. They have selected the card bearing the required word and have then passed it through the head of the 'Language Master' twice - once to get the pronunciation (track 1) and once to get a definition appropriate to the context of the programme (track 2). In the 'Traffic' programme words like 'census' and 'pedestrian' were dealt with in this way.

2. Discussion with the teacher

Elsewhere fears have been expressed that programmes might replace teachers. In the Binley experiment the programmes have been used as a means of strengthening contact between teacher and pupils. Frame 16 of the 'Traffic' programme provides an example:

16. Information from a traffic census may be useful to different people for different reasons. Can you think of one reason why the owner of a petrol station might find the information from a traffic census useful?	Discuss your answer with your teacher.

Thus the programme provides a built-in opportunity for pupils and teacher to discuss points arising in the programme.

3. Observation of film loops

Film loops offer a number of possibilities - e.g.

1. To provide children with an experience which they cannot get at first hand.
2. To provide visual explanations of processes and techniques.
3. To provide stimuli for creative work.
4. To heighten pupils' powers of observation.

In the 'Traffic' programme a film loop was introduced which explored possibility number 4. At a certain point in the programme children were invited to watch a 3½ minute loop sequence which introduced a large number of different types of

road transport. Later in the programme the loop provided the means whereby children in the classroom situation were able to test their ability to classify road vehicles before embarking upon the census.

4. The use of a cassette type tape recorder

Apart from the obvious use of introducing authentic sounds, the cassette type tape recorder has been used to provide stimuli for creative work, to give instructions and to tell stories. At one point in the 'Traffic' programme the children were invited to listen to a NEWS ITEM which described the volume of traffic returning to London on a Bank Holiday evening. In this context it was used to introduce the concept of an hourly rate in the flow of traffic and provided the children with the opportunity to listen as a change from reading.

5. Activity work

Too many early programmes failed to take account of the need for learning to be active. Thus too often programmes constrained students to do nothing except sit and fill spaces or push buttons. The programmes developed at Binley have deliberately included situations in which the children have been required to get away from their desks in order to carry out experiments or collect data. Thus in the 'Traffic' programme the central activity was the carrying through of a traffic census outside the school. In this way the data used in the subsequent part of the programme had a special significance for the children who were interpreting it.

6. Creative work of various kinds

The need to provide opportunities for creative work within the context of a programme has also been recognised with the inclusion of 'SUGGESTIONS PAGES' which have been built into them. An item taken from a SUGGESTIONS PAGE in the 'Traffic' programme is quoted here:

> Imagine you are a radio commentator. Make a tape recording describing the scene in a busy street on a Saturday morning. You will need to practise this until you are satisfied with the result.

7. Visits

Through the co-operation of a nucleus of parents it was found possible to build into the programmes situations which required the pupils to go out into the neighbourhood in a search for specific information. Thus a parent accompanied pairs of children when they conducted their traffic census and sat with them in the genuine 'census hut', kindly loaned by the local council.

Although they have not figured in the 'Traffic' programme, coloured transparencies (produced in association with the Slide Centre in London) have been used to enhance the visual quality of some programmes, whilst model making has also figured as an integral component in some

cases. Thus it will be understood that the programmes have provided a framework within which children have been encouraged to learn in a variety of situations.

At the end of each section the children were provided with a SUMMARY SHEET outlining the main content of what they had studied up to that point. Moreover, before proceeding to a new section each child independently was required to complete a REVIEW SHEET without reference back to the programme. In this way performance was assessed by the teacher at each stage and points of confusion cleared up. The SUGGESTIONS PAGES (already mentioned above) were interspersed between the sections and in this way, despite the fact that work on the Experiment was confined to one day per week, the children worked happily at programmed materials for the major part of a school day. Upon completion of a programme children were encouraged to assemble all the work which had arisen from it in a PUPIL'S FOLDER, the cover of which was then appropriately decorated and the whole thing stapled together.

Finally, about a fortnight after the completion of a programme, each child was given another ASSESSMENT SHEET (identical to the first one) to complete independently and without reference back to the programme. In this way it was hoped to be able to compare the scores achieved before and after the work. At Binley difficulties arose with this aspect of the experiment primarily because of the time factor and the number of different programmes being used. However, each programme is subsequently being validated at schools in many parts of the country and the

results are being carefully studied. In the case of the 'Traffic' programme results spread over a sample of nearly 200 nine to eleven ye.r old children have shown a GAIN RATIO (actual gain divided by possible gain) of almost .7 (point seven). From an analysis of the results alterations are being made to the programmes in the expectation that a higher gain ratio will result in the future.

In the course of the experiment the STAFF concerned experienced a number of frustrations. In practice it was found that the limiting of the programme to one day per week produced an entirely artificial situation and this was further complicated by the fact that the production of the programmes often did not keep pace with the needs of the children. Despite these adverse factors the members of staff concerned agreed that the programmes, supported by the various enrichment materials, could be of considerable benefit to staff and pupils alike. Moreover, when the second phase begins in January 1969, it is hoped to overcome the problems by using a limited number of completed programmes and allowing the class teacher to use them as and when he sees fit.

Happily, the children's attitude to the programmes seems not to have suffered from the difficulties encountered. A questionnaire, completed during the summer term, revealed that 89% of the children favoured a programmed approach. Perhaps the most encouraging comment came from one ten year old girl who wrote: "I think they (the programmes) are the best way of teaching I have ever done. You learn while you enjoy yourself."

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N.B. Since receiving the above from Colin Kefford (now Research Fellow at Coventry College of Education) the following developments have been noted:

a) Of the 30 or more programmes envisaged, eight are now in use in the Coventry school and validation is now taking place in 40 schools. (Traffic, Highway Code, Railways I & II, Farming I & II, Roads, Houses)

b) The parents are now being used not only to supervise the visits but also the programmed work in the classroom.

c) The 'reluctant readers' (eager to work through the programmes but unable to progress) are being helped by having the vocabulary of the programmes put on the Language Master. This machine is being used both as an audio-dictionary and as an 'explanation and task' directive.

d) The rather slow readers are being helped by having complete pages of the programmes 'talked' on to the Ricoh-synchrofax machine by the teachers and Mr. Kefford. Thus the children are able to listen to directions as well as to read them and can therefore carry out the activities while improving their reading skills.

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